

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No: 09/740,939
Attorney Docket No: Q62126

REMARKS

Claims 1-31 are all the claims pending in the application. Applicant has amended these claims for improved conformity with U.S. practice. No new matter has been added.

All of the claims stand rejected as being anticipated or, in the alternative, by Banwell. Banwell, however, was published on April 5th, 2001. The filing date of the present application is December 21st, 2000. Therefore, the Banwell publication does not represent prior art valid against any of the claims of the present application.

Because none of the prior art rejections is based on prior art, it is respectfully submitted that they are literally moot. Applicant therefore respectfully requests the Examiner to withdraw these rejections, and to find the claims as now presented to define patentable subject matter.

Moreover, to facilitate the ultimate disposition of the present application, Applicant provides the following comments regarding Banwell.

As to Banwell p. 37 line 8 - page 39 line 9, Applicant respectfully submits that the Examiner may have made a mistake in interpreting that two DIFFERENTIAL (Banwell) pulses can be read on a requirement relating to a plurality of pulses COVERING DIFFERENT FREQUENCY BANDS. Indeed, differential signals (also called complementary signals in Banwell) are, by common use in the art, signals which are identical except in sign (one is positive whereas the other is negative). The aim of Banwell is to excite a differential mode and to rule out the common mode. This cannot be obtained with several pulses of different frequency bands (used in our invention). Therefore, it was technically incorrect for the Examiner to read the differential pulses of Banwell as the required pulses covering different frequency bands, and Banwell would not have anticipated any of Applicant's claims, even if Banwell did constitute valid prior art.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

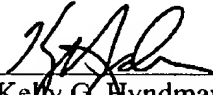
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Examiner feels may be the best resolved through a personal or telephone interview, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Amended) A time domain reflectometry method for determining properties of a transmission channel, [characterized in that it comprises the steps of] comprising:
generating, at one end of the channel, a plurality of pulses [(40, 42, 44)] covering different frequency bands, and [of]
processing, as received signals, the echoes provided by [these] the plurality of pulses at [the same] said one end [(12)] of the channel.
2. (Amended) A method according to claim 1, [characterized in that] wherein the generating is performed so that the frequency bands of the [generated] plurality of pulses overlap [are overlapping].
3. (Amended) A method according to claim 2, [characterized in that] wherein the overlapping of the frequency bands is such that, after reflection and said processing, the frequency spectrum of the plurality of pulses is practically flat.
4. (Amended two times) A method according to claim 1, [characterized in that] further comprising:
providing each [generated pulse is provided] of the plurality of pulses with a given amplification [(48)] or attenuation, and
providing pulses of the received signals [the received pulses are provided] with the corresponding attenuation [(50)] or amplification.

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5. (Amended two times) A method according to claim 1, [characterized in that] further comprising subjecting the received signals [received are subjected] to a synchronous averaging [(52)].

6. (Amended two times) A method according to claim 1, [characterized in that] further comprising subjecting the received signals [are subjected] to a matched filtering [(54)].

7. (Amended two times) A method according to claim 1, [characterized in that] further comprising suppressing noise, in [the received signals are subjected, at least for the] medium and high frequency pulses of the received signals, by [, to a noise suppressing step (56) comprising] estimating [the estimation of] the noise for the part of the received signal after the channel end echo₂ and [the determination of] determining a threshold above which the received signals are taken into consideration.

8. (Amended two times) A method according to claim 1, [characterized in that] wherein the processing of the received signals is performed so that the received signals are processed in their own frequency bands, and then added [(60) after processing].

9. (Amended) A method according to claim 8, [characterized in that] further comprising detecting the variation with time of one or more of:
[the variation with time of] the modulus of the received signals, and [is detected and/or]
[the variation with time of] the frequency of the received signals [is detected].

10. (Amended two times) A method according to claim 1, [characterized in that] wherein the generating of the plurality of pulses is performed so as to generate [the pulses are] complex analytical pulses.

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11. (Amended two times) A method according to claim 1, [characterized in that] further comprising selecting the frequency bandwidth and the amplitude of [the] low frequency pulses of the received signals [(40) are selected] according to the channel attenuation and its compliancy in terms of egress.

12. (Amended two times) A method according to claim 1, wherein [characterized in that] the plurality of pulses are generated sequentially or simultaneously.

13. (Amended two times) A method according to claim 1, wherein at least one of said properties being determined comprises the locations of defects of the channel.

14. (Amended two times) A method according to claim 1, wherein
said transmission channel comprises a telephone line between a central office [(12)] and a subscriber [(14)], and
the [measurement being made] processing of the received signals is performed at the central office.

15. (Amended three times) A method for testing the properties of transmission channels between a central office and a subscriber, [characterized in that it comprises] comprising using [the] time domain reflectometry to test said properties.

16. (Amended two times) A method according to claim 15, [characterized in that] wherein the time domain reflectometry step comprises: [the steps of]
generating, at one end of the channel, a plurality of pulses [(40, 42, 44)] covering different frequency bands, and
detecting echoes provided by these pulses at the same end [(12)] of the line.

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17. (Amended three times) An apparatus for testing the properties of transmission channels between a central office and a subscriber, [characterized in that it comprises] comprising a time domain reflectometry test circuit.

18. (Amended two times) An apparatus according to claim 17, [characterized in that] wherein said time reflectometry test circuit comprises:

a pulse generator generating a plurality of pulses_a at one end of the line_a covering different frequency bands, and
an echo processor processing the echoes provided by these pulses at the same end [(12)] of the channel.

19. (Amended two times) An apparatus according to claim 18, [characterized in that] wherein the different frequency bands are overlapping.

20. (Amended two times) An apparatus according to claim 19, [characterized in that] wherein said echo processor processes the reflected pulses such that the frequency spectrum is practically flat after reflection and processing.

21. (Amended two times) An apparatus according to claim 18, [characterized in that] wherein the pulse generator includes [,] amplification or attenuation for each generated pulse, and [in that] said apparatus includes complementary attenuation or amplification for each received pulse.

22. (Amended two times) An apparatus according to claim 18, [characterized in that it comprises] further comprising a synchronous averager for the received signals.

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23. (Amended two times) An apparatus according to claim 18, [characterized in that it comprises] further comprising a matched filter for the received signals.

24. (Amended two times) An apparatus according to claim 18, [characterized in that it comprises] further comprising [,] amplification or attenuation for each generated pulse and [in that said apparatus includes] complementary attenuation or amplification for each received pulse.

25. (Amended two times) An apparatus according to claim 18, [characterized in that it comprises] further comprising a processor processing the received signals for each frequency band and an adder adding the processed signals.

26. (Amended two times) An apparatus according to claim 25, [characterized in that it comprises] further comprising a detector detecting the modulus of the received signals and/or the variation with time of the frequency of the received signals.

27. (Amended two times) An apparatus according to claim 18, [characterized in that it comprises] further comprising a receiver receiving complex analytical pulses.

28. (Amended two times) An apparatus according to claim 18, [characterized in that it comprises] further comprising a selector selecting the frequency bandwidth and the amplitude of the low frequency pulses according to the line attenuation and its compliancy in terms of egress.

29. (Amended two times) An apparatus according to claim 18 [characterized in that] wherein said pulse generator generates the pulses sequentially or simultaneously.

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30. (Amended) A method according to claim 15 wherein said transmission channels are telephone lines comprising copper pairs between a central office and a subscriber, [characterized in that it comprises] and further comprising a time domain reflectometry test circuit.

31. (Amended) An apparatus according to claim 17 wherein said transmission channels are telephone lines comprising copper pairs between a central office and a subscriber, [characterized in that it comprises] and further comprising a time domain reflectometry test circuit.